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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/598,558	06/21/2000	Edwin F. Barry	800.0037	6686

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EXAMINER

HUISMAN, DAVID J

ART UNIT	PAPER NUMBER
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2183

DATE MAILED: 09/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/598,558

Applicant(s)

BARRY ET AL.

Examiner

David J. Huisman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. Claims 1 and 3-13 have been examined.

#### ***Papers Submitted***

2. It is hereby acknowledged that the following papers have been received and placed of record in the file: Amendment as received on 7/14/2004.

#### ***Specification***

3. The examiner asks that applicant not refer to the SP/PE bit as the S/P bit in the specification. Applicant is not required to change this but the examiner believes this would increase clarity by being more consistent with the claim language.
4. The examiner asks that applicant not refer to the CSB as the "context switch bit" in the specification. Applicant is not required to change this but the examiner believes that changing this to be more consistent with the claims (which say "context select bit") would increase clarity.
5. The examiner asks that applicant clarify in the specification what the AxB configurations mean. More specifically, what is a 1x0 configuration, a 1x1 configuration, or a 2x2 configuration and how do they relate to the number of PEs, for instance.

#### ***Drawings***

6. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the instruction register of claim 1 must be shown to store the SP/PE bit or the feature(s) canceled from the claim(s). In addition,

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the processor state register of claim 1 must be shown to store the CSB and to be independent of the instruction register or the feature(s) canceled from the claim(s). No new matter should be entered. **Also, for any added drawing components, the specification should be updated accordingly to refer to those components.**

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

7. Claim 1 recites the limitation "the CSB value" in lines 15, 16, and 17. There is insufficient antecedent basis for this limitation in the claim, as only "the CSB" was previously mentioned.

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8. Claim 6 is objected to because of the following informalities: In line 6, replace "a SP register file" with --an SP register file--. Also, in line 15, replace "and" with --wherein--.

Appropriate correction is required.

9. Claim 6 recites the limitation "the SP's register files" in the last paragraph. There is insufficient antecedent basis for this limitation in the claim, as a plurality of SP register files were not previously mentioned.

10. Claim 6 recites the limitation "the PE's register files" twice in the last paragraph. There is insufficient antecedent basis for this limitation in the claim, as a plurality of PE register files were not previously mentioned.

11. Claim 7 recites the limitation "the first or second register files" in line 1. There is insufficient antecedent basis for this limitation in the claim.

12. Claim 8 is objected to because of the following informalities: In the last paragraph, replace "persists" with --persisting--. Appropriate correction is required.

13. Claim 8 recites the limitation "the SP/PE selection bit value" in lines 13 and 17. There is insufficient antecedent basis for this limitation in the claim, as only "the SP/PE selection bit" was previously mentioned. Please correct both occurrences.

14. Claim 8 recites the limitation "the CSB value" twice in the last paragraph. There is insufficient antecedent basis for this limitation in the claim, as only "the CSB" was previously mentioned. Please correct both occurrences.

15. Claim 11 is objected to because of the following informalities: In line 3, replace "a SP register file, each PE having a PE register file" with --an SP register file and each PE having a PE register file--. Appropriate correction is required.

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16. Claim 11 recites the limitation "the CSB value" in the third paragraph. There is insufficient antecedent basis for this limitation in the claim, as only "the CSB" was previously mentioned.

17. Claim 11 is objected to because of the following informalities: In the third paragraph, replace "persists" with --persisting--. Appropriate correction is required.

18. Claim 11 recites the limitation "the array processing" in the fifth paragraph. There is insufficient antecedent basis for this limitation in the claim.

19. Claim 11 recites the limitation "the context" in the fifth paragraph. There is insufficient antecedent basis for this limitation in the claim.

#### ***Withdrawn Rejections***

20. Applicant, via amendment, has overcome the rejections set forth in the previous Office Action for claims 1, 3-5, and 7-13. Consequently, these rejections are hereby withdrawn by the examiner.

#### ***Claim Rejections - 35 USC § 102***

21. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

22. Claim 6 is rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al., U.S. Patent No. 4,763,242, (as applied in the previous Office Action and herein referred to as Lee).

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23. Referring to claim 6, Lee has taught an apparatus in which a merged sequence processor (SP) and processor element (PE) processor environment is configurable to be in a first or second array configuration, the apparatus comprising:

- a) a first set of registers stored in a SP register file. See Fig. 1, component 119.
- b) a second set of registers stored in a PE register file. See Fig. 3, component 339.
- c) a sequence processor/processing element (SP/PE) selection bit in an instruction. See column 4, lines 48-54. Note that the processor field indicates whether the sequence processor 103 will be used or whether a processing element (assist processor) will be used.
- d) a context select bit (CSB) in a processor state register, a specific instruction out of the plurality of instructions setting the CSB, the CSB in conjunction with the SP/PE selection bit selecting a context of a first software task utilizing the first array configuration or a context of a second software task utilizing the second array configuration, the first array configuration including at least one register from the second set of registers to execute sequential instruction, the second array configuration including at least one register from the first set of registers to execute sequential instructions. See column 4, lines 66-68. Note that if the processor field of the instruction indicates that an assist processor will be used, the assist field (CSB field) then selects a context. Furthermore, the instruction itself is inherently stored within an instruction register (processor state register). The instruction register (IR) is an integral component within a processor that holds the instruction that is to be decoded and later executed. When the instruction is in the IR, the context select bit is also in the IR, since the bit is part of the instruction. Consequently, the context select bit is in a processor state register. More specifically, one particular field of the IR will correspond to the CSB field, and each specific

instruction, when loaded into the IR, will set that field. In addition, either the main processor or one of multiple coprocessors (COPs) 109 will perform the execution based on the CSB and SP/PE fields. These fields determine which array configuration will be used. For instance, each COP contains its own register file. See Fig.3, component 339. If a COP instruction is encountered, then the CSB and SP/PE fields of the instruction will select a first array configuration, wherein at least one register from the second set of registers is used to execute instructions, i.e., the COP register file will be used while the COP is executing the instruction. On the other hand, if a main processor instruction is encountered, then the CSB and SP/PE fields of that instruction will select a second array configuration, wherein at least one register from the first set of registers is used to execute instructions, i.e., register file 119 will be used while the main processor is executing the instruction.

e) the SP/PE selection bit is used to determine whether the SP's register files or the PE's register files are to be accessed for each instruction execution when the CSB is inactive and to have both sequential and parallel instructions use the PE register files when the CSB is active. See column 4, lines 48-68. When the SP/PE selection bit is set to SP, the CSB is inactive (not used), and the SP's register file 119 will be accessed. The CSB is not used because the CSB is used to indicate which of the PEs should be selected when the SP/PE indicates a PE instruction. When the SP/PE bit indicates a PE instruction, the CSB is active, as it specifies which assist processor (COP, SFU) will execute the instruction. The PE that is to execute the instruction will use its own PE register file during execution. For instance, see Fig.3, component 339. It should be noted that if 10 sequential instructions are to be executed by the same PE, then the sequential instructions will use that PE's register file. However, if instructions alternate between assists (i.e., a first



instructions goes to a first PE, a second goes to a second PE, a third instruction goes to the first PE, the fourth instruction goes to the second PE), then these instructions would be executing in parallel (at the same time on different PEs). These parallel instructions would then be accessing each PE's respective register file. It should be realized that these instructions would be parallel instructions because the SP is pipelined (see column 6, lines 58-60). Therefore, two adjacent instructions being sent to two different PEs will be executing at the same time because the second instruction to arrive will do so before the first instruction is finished executing at the other PE.

***Allowable Subject Matter***

24. Claims 1, 3-5, and 7-13 are allowed. As allowable subject matter has been indicated, applicant's reply must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CFR 1.111(b) and MPEP § 707.07(a). More specifically, applicant must overcome all claim objections set forth above.

***Conclusion***

25. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

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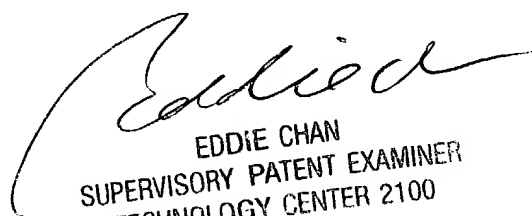
the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David J. Huisman whose telephone number is (703) 305-7811. The examiner can normally be reached on Monday-Friday (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Chan can be reached on (703) 305-9712. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DJH  
David J. Huisman  
September 9, 2004

  
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